FINAL
ENVIRONMENTAL ASSESSMENT

CLEARY PETROLEUM OIL DEVELOPMENT ON THE TRIANGLE RANCH WILDLIFE MANAGEMENT AREA, JUAB COUNTY, UTAH

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Prepared for the U.S. Fish and Wildlife Service, Division of Federal Assistance, Region 6
by
The Utah Division of Wildlife Resources

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Chapter 1: PURPOSE AND NEED

Introduction and Background

This environmental assessment has been prepared to evaluate the impacts of an oil and gas development project by proposed Cleary Petroleum on the Triangle Ranch Wildlife Management Area (WMA).

The WMA is located in Juab County, Utah and is southeast of the city of Nephi (Fig. 1). The Utah Division of Wildlife Resources (Division) purchased the property, in part by federal funding from a grant under the Wildlife Restoration Act, administered by the U.S. Fish and Wildlife Service (Service). The purpose of the acquisition under the grant was for preserving critical winter range for mule deer (*Odocoileus hemionus*) and elk (*Cervus elaphus*).

Cleary Petroleum is leasing the mineral rights under the WMA from a private third party and has proposed to exercise its right to develop the lease for oil exploration and production. This would entail improvement of an existing road, additional road construction, installation of one well pad and production equipment, and directional drilling. Cleary Petroleum has submitted a right-of-way (ROW) application to the Division for use of the surface property so it can access its mineral rights.

Because the proposed project constitutes a change in the original purpose of the grant to purchase the WMA, the Division must seek approval from the Service in the form of an amendment to the grant before permitting the ROW. The Service's approval of the amendment is a federal action requiring compliance with the National Environmental Policy Act. Therefore, the Service and Division are cooperating to prepare this environmental assessment to determine if the proposed action would have significant impacts on the human environment.

Purpose and Need of the Project

The purpose of this project is for Cleary Petroleum to develop its lease under the WMA for oil and gas production by installing one well and an access road. Lion Oil Company held this lease before Cleary Petroleum. Lion Oil had done seismic exploration in the area a few years ago and determined that a reserve of oil and gas existed under the WMA. However, Lion Oil could not afford to drill for this reserve of oil and gas, and approached Cleary Petroleum about purchasing their lease to the mineral rights. Due to uncertainties in the seismic data and the value of the lease, Cleary Petroleum delayed a final decision on the purchase. In the interim, Wolverine Gas and Oil Company discovered a productive oil reserve south of this location. This prompted Cleary Petroleum to purchase the lease from Lion Oil and develop the mineral rights under the WMA.

Another purpose of the project is for Cleary Petroleum to fulfill a business obligation to make a profit by extracting subsurface minerals for oil production. Lion Oil maintains a small share of the lease and will also derive some profit from the operation. Exploitation of this business opportunity in a responsible manner, using new technologies, would contribute to the economy of Utah, while maintaining conditions that would allow the Division to sustain the original objectives of the WMA to conserve big game species and their habitat.

Oil extracted from this development site would be available for purchase and consumption to partially meet this country's energy demands. The main use of petroleum is for fuels such as diesel, jet fuel, and gasoline that would be used for transportation, heating, electricity, and other power generating needs. Petroleum is also necessary for making many other consumer products, including plastics, waxes, lubricants and medicines.

Chapter 2: ALTERNATIVES

Alternative A (Preferred Alternative)

The legal description of the location of the project is Township 13S, Range 1E, Sections 11 and 14 (Salt Lake Meridian). The project site extends from the western end of the southern border of the WMA to about its center (Fig. 2). Cleary Petroleum proposes to improve an existing two-track dirt road extending from Latter Day Saints (LDS) Church property onto the WMA from the south. Improvements would be made on the length of road continuing through the WMA and the adjacent Schools Institutional Trust Lands Administration (SITLA) property and then onto the WMA again until the road veers to the northwest (Fig. 3). Cleary Petroleum would construct a new unpaved road from this point directly north to the well pad site. The road would be 20 feet wide, including side grades, and would be 7,746 feet in length on the WMA. The total amount of disturbance from road improvement and construction on the WMA would be 3.56 acres.

After completion of the road, Cleary Petroleum would clear land for the oil well pad by scraping vegetation and dirt off the project site and stockpiling it on the sides for future reclamation. The well pad would consist of a graded area of exposed soil installed with oil extraction structures, such as a drill rig, well with a pump, reserve pit and flare pit (both of which would be removed after drilling), holding tanks for produced water and oil, gathering pipelines, topsoil stockpile, heater, and storage trailers (which will be removed after drilling and completion of the well).

The footprint of the well pad would be 300 feet by 500 feet, excluding side-cut and fill. The total amount of disturbance to construct the well pad would be about 3.44 acres, excluding side-cut and fill. The amount of side-cut and fill would total no greater than 1 acre of additional disturbance surrounding the well pad. A typical oil well pad is usually 1 to 2 acres in size. The larger size of the proposed well pad is necessary to accommodate directional drilling. Directional drilling from the original well pad would be used to determine if minerals are available for extraction north of the proposed well pad. If more oil is discovered, directional drilling would be used to extract it without the need for constructing new well pads.

A reserve pit for drill cuttings and excess drilling mud would be built on site to the specifications of the Utah Division of Oil, Gas and Mining (UDOGM). This reserve pit would be lined to prevent seepage of material into the soils and would be fenced for safety and to prevent wildlife from entering it. The reserve pit would remain until water has evaporated and the liner could be safely buried or removed and disposed of in a proper waste facility in Utah.

Drilling would take place for 20 to 30 days, with a crew of 3 to 4 employees present around the clock. Water needed for drilling would be purchased and hauled in by truck three to five times per day on average.

Once the drilling has been finished and steel-pipe casing has been cemented, the well will be "completed." "Completion of a well" is oil and gas industry terminology and entails perforating the casing in the geological formation containing oil or natural gas.

If productivity of the formation is not adequate, the well may require stimulation to increase the flow capacity of the formation. Typically wells are stimulated by cleaning the perforations with hydrochloric acid and pumping the acid back into the rock pores and flow channels. In some instances, the formation may need additional stimulation. If this becomes the case for this project, the formation would be hydraulically fractured. This process involves pumping gelled water carrying sand into the formation at high pressure and pump rates. Once the formation has been fractured it would be filled with sand, allowing oil and natural gas to flow more freely into the wellbore. The completion process would take approximately ten days.

After the well has been completed, flow back of the stimulation fluids and testing of the well would take place. If the well is productive, but does not flow on its own, artificial life equipment such as a pump jack or submersible electric pump would be installed. The amount and type of power required would be determined based on the well's ability to produce. If a pump jack is installed, power would be self-contained on the property from natural gas produced from the well or from propane tanks located on site. However, if a submersible electric pump is needed, an electric transmission line would be buried underground along the edge of the access road.

Depending on the amount of production, holding tanks may be installed at the site to hold the oil and any produced water. If this is the case, tanker trucks would haul the oil and produced water at regular intervals based upon production.

Gathering pipelines may be buried adjacent to the road later, and a gathering tank may be installed on private property after determining the amount of production.

Wastewater from drilling would be placed in a holding tank or in the reserve pit, and will be removed from the area by truck. Water in the reserve pit would be allowed to evaporate before removing or burying the liner.

Initially, the oil well would be checked daily or every other day to make sure it is operating correctly. Remote telemetry would be installed once the well is in production. This technology would allow the company to monitor the operation of the well from an office location and reduce the number of trips to the well. If the well is not operating properly, an employee would go on

site to check the well. If an employee cannot respond quickly, the well would be shut down remotely. However, if the well is shut down, it can only be restarted manually, requiring an employee to access the well site.

Once the oil well is in production, most of the disturbed area not in use on the project site would be revegetated with a seed mix approved by the Division. If invasive and noxious weeds become established, Cleary Petroleum would take responsibility for controlling them to the specifications of the Division.

A cattle guard and gates would be installed on the improved road to prevent stray cattle and unauthorized off-highway vehicle use on the property, respectively. Fencing may be installed along the southern boundary of the WMA as additional deterrence to access. Cleary Petroleum and the Division would work closely to determine the most effective placement of gates and fencing to deter off-highway vehicle use on the WMA.

If snow banks from plowing the road reach two feet high, Cleary Petroleum would cut snow breaks at to allow movement of big game and other wildlife across the road. The number and intervals of snow breaks would be determined in consultation with the Division.

Cleary Petroleum has agreed to implement a habitat improvement project on the WMA. Cleary Petroleum would cooperate with the Division to bulldoze specified pinyon (*Pinus edulis*) and juniper (*Juniperus osteosperma*) trees to open up the habitat. The work would be accomplished opportunistically as the WMA's habitat manager determines is necessary while Cleary Petroleum's bulldozers are on site. The size and location of the habitat improvement project on the WMA has not been determined at this time.

If the well is not productive, the well would be plugged according to UDOGM rules and regulations. Cleary Petroleum would reclaim and reseed the area to the specifications of the Division.

UDOGM's surface use plan for this project stipulates required measures for addressing potential spills of hazardous materials. Cleary Petroleum must contain any spills with berms, clean up any spills within specific time requirements, and remove any contaminated soils and dispose of them in proper waste facilities in Utah.

Road improvements and construction and well pad construction would take from one to two weeks to complete. Oil production could last for up to 20 years or more. Further oil extraction could occur for another 20 years or more if more oil is discovered through directional drilling.

Alternative B

This alternative would be the same as the preferred alternative (Alternative A), except for the following differences. Cleary Petroleum would construct an additional 1,250 feet of road past the point where the well pad would have been in the preferred alternative. The well pad would be installed at the end of this road on the eastern side of the mountain (Fig. 4). This would result

in approximately 0.58 acre of habitat disturbance additional to the 8 acres of disturbance in the preferred alternative.

Alternative A is preferred over Alternative B because the well pad in Alternative B is located further away from the bottomhole and would require more time and would be more costly to directionally drill, in addition to the extra cost of additional road construction. Furthermore, it would result in slightly more habitat disturbance than Alternative A.

No Action Alternative

Under the no-action alternative, Cleary Petroleum would not improve the existing road, construct a new road, or install a well pad and associated oil production structures. The habitat improvement project on the WMA would not likely occur, as the necessary equipment would not be available to carry it out. Cleary Petroleum would not install cattle grates, gates, or fencing.

Dismissed Alternatives

Some alternatives considered but eliminated from further analysis include placing the well pad farther north than in Alternative A and placing the well pad on the northwest side of the mountain (Fig. 5). These options were eliminated from further analysis because the seismic exploration data indicated that the bottomhole was located further south than could be reasonably reached by directional drilling under these scenarios. These alternatives would have resulted in unjustified financial and habitat costs due to construction of longer roads, longer distances needed for directional drilling, and increased length of time to accomplish the project.

An additional alternative considered but eliminated involved improving the existing two-track road from west of the WMA to the point north of Biglows Canyon where new road is constructed in Alternative A (Fig. 6). From there, Cleary Petroleum would construct new road and the well pad as in Alternative A. This option was dismissed because the cost of the additional road improvement was unjustified, roadwork would be more difficult and result in more erosion due to the steeper terrain, and habitat destruction would be greater.

Chapter 3: AFFECTED ENVIRONMENT

The WMA encompasses 2,827.41 acres and is between 5,200 and 7,400 feet in elevation. It is bordered by private land to the south and west, by State Highway 132 to the north, and by U.S. Forest Service (USFS) property to the east. The Mount Nebo Wilderness Area, managed by the USFS, lies three miles north of the northern boundary of the WMA.

Physical Resources

Air

According to the Utah Department of Environmental Quality, the air quality in the WMA and surrounding area is currently well within the standard limits of the National Ambient Air Quality Standards.

Water

There are no major drainages in the WMA. Run-off drains ephemerally toward the northwest through Andrews Spring Canyon, Miller Canyon and Biglows Canyon. Placement of the well pad would be outside any of these canyons, but the new road would be built near Biglows Canyon. The two-track road to be improved passes through the Biglows Canyon area and crosses the canyon in an area with a lower grade.

Two springs are known to currently or historically exist in the vicinity. One is at the head of Andrews Spring Canyon and the other has been dewatered by a pipeline at the head of Biglows Canyon.

Soils

The WMA contains shale-clay-loam soils in the lower elevations and sandy-clay-loam soils in the higher elevations. The soils vary from being gravel-free to gravel-sized throughout the WMA.

Biological Resources

Threatened and Endangered Species

The federally threatened bald eagle (*Haliaeetus leucocephalus*) is the only species known to occur in Juab County that is listed under the Endangered Species Act of 1973, as amended (Appendix A). The yellow-billed cuckoo (*Coccyzus americanus*) is a candidate for federal listing and also is known to occur in Juab County (Appendix A). There are no records of these species within a three-mile radius of the WMA (Appendix B), nor does suitable habitat for these species occur in the vicinity of the project area. Critical habitat for listed species has not been designated within or adjacent to the WMA.

Utah State Sensitive Species

A list of Utah State Sensitive Species in Juab County is in Appendix A. There are no records of these species occurring within a three-mile radius of the WMA.

Terrestrial Wildlife

About 400 to 500 mule deer and 30 to 40 elk use the WMA and adjacent areas, primarily in the winter. Areas of the WMA, including the project site, support critical winter range for both mule deer and elk. Elk winter in the WMA mostly on the western side of the mountain away from the project site (Dennis Southerland, UDWR Central Region Wildlife Biologist, pers. comm., February 2005), but some animals pass through the project area intermittently (Fig. 7). The extreme eastern part of the WMA supports a small area of summer range for mule deer (Fig. 8).

Some mammalian predators known to occur or potentially occur in the area include the coyote (*Canis latrans*), striped skunk (*Mephitis mephitis*), long-tailed weasel (*Mustela frenata*), red fox (*Vulpes vulpes*), and cougar (*Puma concolor*). Several species of small mammals are found in

the area including lagomorphs and rodents. The area also supports several reptiles, including but not limited to the common sagebrush lizard (*Sceloporus graciosus*), eastern racer (*Coluber constrictor*), terrestrial gartersnake (*Thamnophis elegans*), greater short-horned lizard (*Phrynosoma hernandesi*), western skink (*Eumecus skiltonianus*), and Great Basin (western) rattlesnake (*Crotalis oreganos lutosus*).

Avian Species

The WMA also supports upland game birds, such as the wild turkey (*Meleagris gallopavo*) and chukar (*Alectoris chukar*), as well as other avian species. Some migratory birds known to occur in the area include the American goldfinch (*Carduelis tristis*), juniper titmouse (*Baeolophus ridgwayi*), American robin (*Turdus migratorius*), white-crowned sparrow (*Zonotrichia leueophrys*), and yellow warbler (*Dendroica petechia*). Two raptors known to forage in the WMA are the red-tailed hawk (*Buteo jamaicensis*) and sharp-shinned hawk (*Accipiter striatus*).

Vegetation

The dominant vegetation on the WMA consists of pinyon-juniper and sagebrush plant communities. The primary vegetation types within these communities include pinyon pine (*Pinus edulis*), juniper (*Juniperus* sp.), Gambel oak (*Quercus gambelii*), and "mountain brush" which includes bitterbrush (*Purshia* sp.), big sagebrush (*Artemisia tridentata*), black sagebrush (*Artemisia nova*), oak (*Quercus* sp.) and service berry (*Amelanchier pumila*).

The Natural Resources Conservation Service has identified ecological types on the property based on soil type. These ecological types are defined as a distinctive kind of land with specific physical characteristics conducive to producing unique types and amounts of vegetation. They include upland stony loam-black sagebrush, mountain stony loam-oak, mountain stony loam-mountain big sagebrush, mountain stony loam- bitterbrush and forestland.

Some noxious and invasive weeds on the WMA include white top (*Erigeron annuus*) and thistle (*Cirsium* sp.). The Division sprays these species annually with herbicide. Knapweed (*Centaurea* sp.) occurs in the vicinity of the WMA and has a potential to eventually spread to the property.

In the past, the Division has used grazing as a management tool on the WMA by allowing a limited number of cattle to graze in controlled areas at certain times of the year (usually early spring). After certain intervals the Division moved the cattle to other sections to allow native grasses to regenerate in the grazed areas. However, the Division has placed a moratorium on all grazing permits on the WMA for the past four years to eliminate additional stress to vegetation during drought conditions. The Division will likely retain the grazing moratorium for another two years. Thereafter, the Division will evaluate annually whether grazing would be a beneficial management tool on the WMA. Cattle from adjacent LDS Church land occasionally stray onto the WMA and could damage habitat over the long term if not controlled, especially if drought conditions continue.

Historic and Cultural Resources

P3 Archaeological Consultants conducted an archaeological survey of the project area and the results were submitted by the Division to the State Historic Preservation Office for review. Six sites were found in the project area. These sites include a historic road, three lithic artifact scatters and one lithic artifact scatter with groundstone. The lithic artifact scatter with groundstone is eligible for the National Register of Historic Places.

Recreational Resources

The Division allows hunting, wildlife viewing, and other recreational opportunities for the public on the WMA during most of the year. Horseback riding is a popular recreational activity in this area, with adjoining trails on the Manti-La Sal National Forest to the east. The WMA is seasonally closed to recreational users from December 1 to April 15 to avoid disturbing wintering mule deer and elk. Off-highway vehicle use is allowed only on existing roads on the property.

Other Resources

No prime or unique farmlands, wetlands, 100-year floodplains, wild or scenic rivers, national parklands or natural landmarks occur in the project area

Socioeconomic issues will not be analyzed in this environmental assessment because the alternatives have no measurable effects to those living in the surrounding area.

Chapter 4: ENVIRONMENTAL CONSEQUENCES

Physical Resources

Air

Alternative A (Preferred)
The proposed project would not significantly impact air quality in the WMA. The proposed well would be powered by natural gas or electricity. If it is powered by electricity, no emissions are expected. The well would release minimal levels of emissions if powered by natural gas.

Alternative B
Impacts would be the same as described for Alternative A.

No Action
No impacts to air quality are expected under this alternative.

Water

Alternative A (Preferred)
Water quality in local drainages is not likely to be significantly impacted. The well pad and access road avoid most of the drainage corridors. The existing two-track road crosses Biglows Canyon in an area where the grade is relatively flat. Therefore, erosion from project activities is expected to be minimal.

Cleary Petroleum will implement best management practices recommended in the Surface Operating Standards for Oil and Gas Exploration and Development (Gold Book) (BLM and USFS, 1989) for road and well pad construction to further reduce the likelihood of sedimentation in the drainages from project activities. Some of these best management practices include stockpiling dirt and vegetation in areas where there would be minimal erosion from wind and water; ensuring road grades are no more than 8 percent except in special cases; and using drainage dips, insloping, culverts, and natural topography in the area to provide adequate drainage of water from the road.

Drilling of the well or associated activities are not likely to interfere with the two known springs or any underground aquifers that may be present in the area. The spring in Andrews Spring Canyon is about 0.75 mile to the east of the project area, and the spring in Biglows Canyon has been dewatered by previous actions. If the well goes through an aquifer, the formation will be sealed off as drilling proceeds so that the well is not infiltrated with water and the aquifer is not compromised. Therefore, no impacts to any existing springs or aquifers in the area from the proposed project are expected.

Because water for drilling would be purchased and transported from off site, no impacts to surface or ground water from withdrawals are expected. Local drainages would not risk contamination because wastewater would be stored in a holding tank or a lined reserve pit.

Alternative B
Impacts would be the same as described for Alternative A.

No Action
No impacts to drainage pathways, any existing springs or aquifers are expected under this alternative.

Soils

Alternative A (Preferred)
Impacts to soils from erosion are expected to be negligible. Implementation of best management practices from the Gold Book (BLM and USFS, 1989) for road and well pad construction will minimize the chance for erosion and soil loss to occur in the project area.

No impacts to soils would be expected from the installation of the reserve pit, because it would be constructed according to UDOGM standards.

Alternative B
Slightly more chance of soil erosion may exist for the additional 0.58 mile of road construction. However, implementation of best management practices would keep potential impacts to a negligible level.

No Action
No impacts are expected to soils under this alternative.

Biological Resources

Threatened and Endangered Species

Alternative A (Preferred)
No impacts are expected to occur to federally listed species because none are known to occur in the WMA. Designated critical habitat would not be affected because none occurs in the WMA.

Alternative B
Impacts would be the same as described for Alternative A.

No Action
No impacts would occur to federally listed species or designated critical habitat under this alternative.

Utah State Sensitive Species

Alternative A (Preferred)
No impacts are expected to occur to any Utah State Sensitive Species because none are known to occur in the project area.

Alternative B
Impacts would be the same as described in Alternative A.

No Action
No impacts would occur to any Utah State Sensitive Species under this alternative.

Terrestrial Wildlife

Alternative A (Preferred)
The project would result in a long-term loss of approximately eight acres of habitat for mule deer, elk, and other wildlife species. Surrounding acreage on the WMA and adjoining habitat on USFS lands directly to the east of the WMA would not be affected. Cleary Petroleum would reclaim the area after production is halted, but that may not occur for up to 20 to 40 years or more. However, eight acres is a small fraction (0.003 percent) of the suitable habitat that would remain available to wildlife on the WMA. Therefore, the habitat loss is not expected to significantly impact these species.

The project footprint would not interrupt any major movement corridors for wildlife. Ample habitat suitable for movement and foraging surround the project area. Mule deer use of their summer range on the WMA would not likely be impacted by this project because it occurs about 1.7 miles to the east of the project.

Noise and activities associated with road construction, drilling and production, vehicle traffic, and site rehabilitation may result in short-term impacts to wildlife from disturbance and displacement over a two-week period. Noise and activities from production and associated traffic would occur throughout the life of the project, possibly 20 years or more, but would be substantially reduced below construction levels.

Displacement of big game and other wildlife from habitat in the vicinity of the well, road, and immediate adjacent area would be expected during construction, drilling, testing, and production. Studies indicate that elk may be disturbed from normal habitat use by noise and human activity for distances ranging from 0.5 mile (Brekke 1988, Hayden-Wing Associates 1991a) to 1.06 miles (Cassirer et al.1992). A study on disturbance from seismic exploration found that elk were disturbed from up to 1.98 miles away (Gillin 1989). Mule deer may be disturbed from habitat use by noise and activity for distances ranging between 0.29 mile (Freddy et al. 1986b) to 0.5 mile (Morton et al. 2004, Weller et al. 2002).

Elk tend to react less to traffic along roads than to concentrated areas of noise and activity, such as well sites. Elk are likely to remain away from the area around the well pad until the activity has ceased for a period of time.

Impacts to mule deer and elk as result of displacement from habitat in the vicinity of the project are not expected to be significant because plentiful suitable habitat exists in the surrounding area. Furthermore, seasonal restrictions on construction activities (December 1 to April 15) would avoid displacement impacts during the winter when availability of habitat in the area would be more critical. During seasonal closure, employees would visit the well only when necessary and during mid-day hours so big game would not be disturbed at during dawn and dusk hours when they are most active. However, repairs may require employees to be at the well site around the clock for short durations. The daytime visit restriction would not be enforced during these cases. Because any disturbance to animals from this kind of activity would be infrequent and short in duration, impacts to big game are not expected to be significant. During the highest levels of project activities and noise, in late April and early May, most mule deer and elk would be in their summer range away from the project area and where they would not be affected by the project.

After completion of road and well pad construction, the intensity of noise and activities at the well pad are expected to subside. Use of remote telemetry to monitor the well during production would reduce the number of trips onto the property and further minimize the likelihood of displacement. Big game may become habituated to the lower intensity activity over time and return to the surrounding area. Once the project is completed and habitat values at the well pad are returned after reclamation, big game species are likely to use the area in the same manner as before construction. Therefore, complete displacement of big game from the well pad and surrounding area would be short-term, while displacement levels over the long term are expected to diminish as animals become habituated to the lower levels of noise activity during production.

Disturbance of big game and other wildlife from noise and activities associated with the project can also result in increased energy costs to the animal. A disturbed animal may incur a physiological cost either through excitement or locomotion. A fleeing or displaced animal may incur additional costs through loss of food intake and potential displacement to lower quality habitat. If the disturbance becomes chronic or continuous, these costs can result in reduced animal fitness and reproductive potential. However, this is not expected as a result of this project, because construction activities, when noise and activities would be the most disturbing, would last for only two weeks. As discussed above, intensity of noise and activities during production would be lower and, thus, is not expected to result in levels of disturbance that would be detrimental to survival or productivity of big game or other wildlife.

Employees of Cleary Petroleum and its contractors would be prohibited from bringing firearms or dogs onto the WMA, which would prevent harassment and further disturbance of wildlife species, as well as poaching.

Improvement of the existing two-track road and the new road construction could attract off-highway vehicle use in the WMA. Off-highway vehicles can degrade and fragment habitat by damaging or destroying vegetation; causing erosion; and disturbing soils, which could promote the establishment of noxious weeds. Such effects could reduce the quality of the habitat for foraging, sheltering, and breeding of small mammals and big game. Furthermore, noise and activity from off-highway vehicles could disturb wildlife species from normal behaviors, resulting in increased energy costs to the animals and potential reproductive failure. The installation of gates at the entrances of the WMA on the southern boundary would deter access by off-highway vehicles. The locking of gates to the public during the winter would minimize the potential for disturbance to wintering big game. Existing signs along the two-track road educating off-highway vehicle users on the importance of staying on the road would continue to help reduce incursions into habitat.

Potential impacts to wildlife resources in the area from off-highway vehicles would be further minimized if Cleary Petroleum and the Division agree to the installation of fencing along the southern boundary.

Mortality due to road kill associated with increased traffic on roads is a potential direct impact to wildlife. Cleary Petroleum employees and contractors would be educated regarding safe vehicle speed limits. This measure would be expected to reduce the effect of vehicle collisions to insignificant levels.

<u>Alternative B</u>

Impacts would be the same as described for Alternative A, except for the following differences. Slightly more habitat (0.58 acre) would be lost to additional road construction. The additional length of directional drilling would require Cleary Petroleum to operate the production phase for a longer period of time, thereby increasing the amount of time wildlife would be exposed to disturbance from project-related noise and activities. A slightly higher potential for roadkill of wildlife exists due to the increased length of road.

No Action
The habitat improvement project would not occur under this alternative. As a result, canopy from overabundant pinyon and juniper would continue to suppress growth of understory vegetation and limit structural complexity and habitat diversity for small mammals and reptiles. No other impacts are anticipated to big game or other wildlife species under this alternative.

Avian Species

Alternative A (Preferred)
The project would result in the loss of eight acres of occupied or suitable habitat for avian species. Noise and activities associated with the project and potential off-highway vehicle use may disturb or displace birds from suitable habitat near the project site. However, avian species are not likely to be significantly affected by the proposed action and related activities because the project site and nearby areas are not known to support habitat that is ecologically critical to any of these species. Ample habitat of equivalent quality is available for use as alternatives to the disturbed habitat in immediately surrounding areas and beyond on the WMA. A slight increase in mortality from increased traffic may occur but the amount would be minimized by precautionary measures, such as educating workers on appropriate vehicle speeds. Therefore, mortality from collisions with vehicles is not expected to cause significant adverse effects to local populations.

The project may result in a slight reduction of prey availability to raptors through mortality of small mammals, reptiles and birds, but most prey species are likely to move into adjacent suitable habitat. Raptors are highly mobile and are likely to adapt readily to foraging in nearby habitat. Raptors are not known to nest within or near the proposed project site. Therefore, no significant impacts to raptors are expected from the project.

Alternative B
Impacts would be the same as described for Alternative A, except for the following differences. Slightly more habitat (0.58 acre) would be lost to additional road construction. The additional length of directional drilling would require Cleary Petroleum to operate the production phase for a longer period of time, thereby increasing the amount of time birds would be exposed to disturbance from project-related noise and activities. A slightly higher potential for roadkill of birds exists due to the increased length of road.

No Action
The habitat improvement project would not occur under this alternative. As a result, canopy from overabundant pinyon and juniper would continue to suppress growth of understory vegetation and limit structural complexity and habitat diversity for avian species. No other impacts are anticipated to avian species under this alternative.

Vegetation

Alternative A (Preferred Alternative)
Ground disturbance in the project area would cause a nearly complete loss of vegetation, including pinyon-juniper and sagebrush communities, on eight acres of the WMA. Once the

drilling is done and the well is in its production stage, Cleary Petroleum, in cooperation with the Division, will reseed the area no longer in use. Locally native seed would be used for revegetation to promote a return to previous habitat composition. The loss of eight acres of vegetation represents a very small portion (0.003 percent) of the entire WMA and, thus, would not significantly affect wildlife values of the WMA. Furthermore, the area of impact does not support any rare, sensitive, or locally endemic plant species.

The proposed cooperative habitat improvement project would partially compensate for habitat impacts. Bulldozing overabundant pinyon and juniper trees would open the canopy to allow increased growth of understory plants. These benefits would include increased structural complexity and habitat diversity, which would provide more opportunities for foraging, sheltering, and breeding for avian and small mammal species.

Disturbed and exposed soils in the oil development project area could promote establishment of invasive vegetation. Cleary Petroleum and its contractors would wash equipment before entering the WMA to eliminate non-native plant material that may be attached to equipment. Cleary Petroleum would control any additional spread of noxious weeds currently on site or invasion of new ones into the project area. Cleary Petroleum would obtain prior approval from the Division for any herbicide use on the WMA. Cleary Petroleum would adhere to all herbicide label requirements and use only a certified applicator.

The installation of cattle guards, along with gates and fencing, would reduce the number of cattle that currently stray onto the WMA. This would minimize the potential for habitat degradation where stray cattle may overgraze vegetation, which may prevent regeneration of native grasses, cause erosion, and promote invasion of noxious weeds on the WMA.

Alternative B

Impacts would be the same as described for Alternative A, except for the following differences. Slightly more vegetation (0.58 acre) would be lost to additional road construction. The additional ground disturbance from the increased length of road may result in a slightly higher potential for establishment of invasive weeds.

No Action

The habitat improvement project would not occur under the no action alternative. As a result, canopy from overabundant pinyon and juniper would continue to suppress growth of understory vegetation and limit structural complexity and habitat diversity. Furthermore, cattle guards would not be installed and cattle would continue to stray onto the WMA, causing habitat degradation by preventing regeneration of native grasses, causing erosion, and promoting invasion of noxious weeds.

Historic and Cultural Resources

Alternative A (Preferred Alternative)

All historic and cultural resources discovered during the archeological surveys of the project area, including the habitat improvement area, would be flagged and avoided during construction

and drilling. Therefore, the proposed action would have no impact on historic or cultural resources present on the property.

Alternative B
Impacts would be the same as described for Alternative B.

No Action
No impacts to historic and cultural resources are expected under this alternative.

Recreational Resources

Alternative A (Preferred Alternative)
Recreational activities would not be allowed near the project area for safety reasons; thus, slightly reducing the amount of area in the WMA available for hunting, wildlife viewing, and horseback riding. Operation of vehicles and equipment on the road and well pad may detract from the visual and auditory qualities of recreational use in the vicinity of the restricted area. However, large portions of the WMA would still be available for recreational activities.

Alternative B
Impacts would be the same as described for Alternative B, except for the following difference. Due to the additional time required for directional drilling, recreational activities would be restricted and the quality of recreational values would be reduced near the project area for a longer period of time.

No Action
No impacts to recreational activities are expected under this alternative.

Cumulative Impacts

A cumulative impact is defined in 40 C.F.R. §1508.7 as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time."

Cleary Petroleum is the only known potential lessee of the remaining subsurface mineral rights associated with the WMA. Not enough information is currently available to predict the extent of potential oil and gas development on the WMA beyond the proposed project. If the current proposed project results in immediate opportunities for further oil development in the WMA, Cleary Petroleum would use directional drilling to extract the minerals. This method would result in additional short-term ground disturbance from burial (and potential removal after production completion) of electric lines and gathering pipelines along the road, but would result in fewer effects to wildlife values than constructing another well. However, any oil development in other areas of the WMA may require further construction of wells and access roads. Full-field development of the WMA would be limited to one well per 160 acres, which would amount to a

maximum of 17 wells. Well pads that would not be prepared for directional drilling would be typically 1 to 2 acres in size, rather than the approximately 3.4 acres of the proposed pad. Not enough information is available to predict where wells would likely be placed and access roads constructed.

The Division would provide guidance and establish restrictions for oil and gas developers to consider in the design of any future development projects to minimize adversely affecting wildlife values on the WMA. However, if oil and gas development projects cannot be designed to minimize such effects and the WMA can no longer fulfill its original purpose, the Division must either fully restore control of the property or replace the property with that of equal current market value and equal benefits within three years, pursuant to 50 C.F.R. § 80.14.

Physical Resources

Air

The Utah Department of Environmental Quality (UDEQ) reports no current impacts to air quality in the area from other sources such as wells, highways, or the city of Nephi. There are currently no known future projects in the vicinity of the project area that may impact air quality. Based on projected population growth of Nephi and surrounding areas of Juab County, the UDEQ does not predict that air quality standards would be exceeded in the general area in the foreseeable future (Deborah McMurtrie, Environmental Scientist, UDEQ, pers. comm., February 14, 2005). If full-field development would occur, the Division would work with oil and gas developers to ensure that emissions from energy sources for powering production equipment and traffic would be below the level of significance. Based on this information combined with the insignificant impacts from the proposed project, any cumulative impacts to air quality are not expected to be significant.

Water

No past projects have affected any drainages on or downstream from the WMA, nor are any future projects expected to affect drainages on or downstream of the property. A pipeline installed by a third party dewatered a spring located in Biglows Canyon in the past. No projects are known to be proposed outside the WMA in the reasonably foreseeable future that may affect groundwater. If full-field development would occur, the Division would work with oil and gas developers to ensure that precautions used for the current project would be applied to future wells to avoid impacts to drainages, springs, and aquifers. Based on this information in combination with the insignificant effects predicted from the proposed project, any cumulative effects to drainages on or downstream of the WMA are not expected to be significant.

Soils

No past projects are known to have caused soil erosion on the WMA. The Division would ensure that any future projects, including full-field oil and gas development, would adhere to the best management practices for soil conservation outlined in the Gold Book (BLM and USFS, 1989) and that disturbed soils would be revegetated. Based on this information, combined with the measures to be implemented to avoid soil erosion from the proposed project, adverse cumulative effects to soils on or in the vicinity of the WMA are not expected to be significant.

Biological Resources

Wildlife and Habitat

Interstate 15 and development associated with the city of Nephi to the west of the WMA probably prevents natural movement of big game and other wildlife species into the Juab Valley. State Highway 132 to the north of the WMA likely hinders movement of these species between the WMA and the Uintah National Forest to the north. Some wildlife crossings installed in these roads may partially mitigate these effects. No known activities or development have hindered wildlife movement between the WMA and the Manti-La Sal National Forest to the east. No other activities on the WMA or in the immediate vicinity are known to have adversely affected wildlife and habitat on the WMA.

The LDS Church is not known to have any plans for development of their property immediately to the west and south of the WMA. Grazing is likely to continue on the property, but cattle guards installed by Cleary Petroleum are likely to reduce the number of cattle straying onto the WMA. SITLA is not known to have immediate plans for the development of their property at the south end of the WMA. If further oil and gas development occurs on the WMA, holding tanks may be constructed on the SITLA property. SITLA may sell the property in future. Steep topography between the WMA and I-15 and State Highway 132 would likely prohibit encroaching residential or commercial development.

Depending on placement of wells and access roads, full-field oil and gas development of the WMA may result in increased adverse impacts to big game and other wildlife. Increased and constant noise and activities associated with oil and gas production could disturb wildlife species from fully engaging in normal foraging, sheltering, and breeding behaviors. Access roads and associated traffic could fragment habitat and hinder natural movement of wildlife species and access to critical wintering grounds by big game. Predation of small mammals and avian species could increase from a proliferation of artificial perches for raptors from structures associated with oil field development. Increased soil disturbance and movement of vehicles into the WMA associated with full-field development would increase the risk of establishment of noxious weeds. Full-field development could result in the loss of at least 17 acres of wildlife habitat on the footprints of well pads alone. Based on the cumulative duration of operation for each well in full-field development, these impacts would occur over a much greater lifetime than the proposed project. However, the Division would work with oil and gas developers to minimize impacts through project design, best management practices, restrictions, and mitigation measures, such as habitat restoration, enhancement, and protection. Considering this information and the unknown probability of full-field development in the future and its likely configuration, it is not possible to determine if cumulative effects to big game species and other wildlife would be significant at this time.

Cultural and Historical Resources

No activities are known to have adversely affected any cultural or historical resources on the WMA. Any future development projects on the WMA would require archeological inventories in accordance with Section 106 of the National Historical Preservation Act because the property was acquired with federal funds. If significant cultural or historical sites are discovered, project

proponents would be required to either avoid the sites or mitigate their disturbance through data collection for each site before development. Based on this information and these requirements, cumulative effects to cultural and historical resources are not expected to be significant.

Recreational Resources

No activities or events are known to have adversely affected recreational activities allowed on the WMA. Future oil and gas development would likely result in further restrictions on hunting, wildlife viewing, and horseback riding in the vicinity of the wells for safety reasons. Because the configuration of well and road placement for full-field development cannot be predicted at this time, it is not possible to determine if cumulative effects to recreational uses on the WMA would be significant.

Chapter 5: CONSULTATION AND COORDINATION

The Division is processing the Surface Use Plan and ROW application for the proposed project, which would not receive final approval until completion of NEPA requirements and approval from the Service for an amendment to the grant that funded acquisition of the WMA. Cleary Petroleum has submitted an Application for a Permit to Drill (APD) for the proposed project to the UDOGM; approval of the APD is contingent upon finalization and approval of the Surface Use Plan and ROW easement.

Cleary Petroleum has negotiated approval for improving the existing road on the LDS Church property, and has submitted an application for approval of project-related activities on the SITLA property.

The following individuals were consulted in the preparation of this document:

Ashley Green, Habitat Manager, Central Region UDWR
Doug Sakaguchi, Habitat Biologist, Central Region UDWR
Dennis Southerland, Wildlife Biologist, Central Region UDWR

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Table 1. Matrix of Environmental Consequences Summary

Affected Component	**Alternative A**	**Alternative B** (compared to A)	**No Action Alternative** (compared to A)
Air	No impacts	No impacts	No impacts
Water	No impacts	No impacts	No impacts
Soils	Minor potential for erosion, but minimized with best management practices	Slightly more (0.58 ac) potential for erosion, but minimized with best management practices	No impacts
Threatened and Endangered Species	No impacts	No impacts	No impacts
Utah Sensitive Species	No impacts	No impacts	No impacts
Terrestrial Wildlife	Long-term loss of 8 acres (0.003%) of available wildlife habitat; minimized by reclamation and ample remaining habitat. Increased energy costs to wildlife from disturbance and displacement from habitat in project area from noise and activities first 2 weeks; diminishes during long-term production. Reduction of habitat quality by potential unauthorized off-highway vehicle use; minimized by gates. Mortality from vehicle collisions; minimized by controlling vehicle speed.	Slightly more long-term loss (0.58 ac) of available wildlife habitat; minimized by reclamation and ample remaining habitat. Energy costs to wildlife from disturbance and displacement from habitat in project area from noise and activities first 2 weeks about the same as A; longer period of diminished disturbance and displacement during long-term production from additional directional drilling. Reduction of habitat quality by potential unauthorized off-highway vehicle use same as A; minimized by gates. Slightly higher potential for mortality from vehicle collisions due to longer road; minimized by controlling vehicle speed.	Without habitat improvement project, continued suppression of understory growth, limiting structural complexity and habitat diversity for wildlife. No other impacts.
Avian Species	Long-term loss of 8 acres (0.003%) of available bird habitat; minimized by reclamation and ample remaining habitat. Increased energy costs to birds from disturbance and displacement from habitat in project area from noise and activities first 2 weeks; diminishes during long-term production. Reduction of habitat quality by potential unauthorized off-highway vehicle use; minimized by gates. Mortality from vehicle collisions; minimized by controlling vehicle speed.	Slightly more long-term loss (0.58 ac) of available bird habitat; minimized by reclamation and ample remaining habitat. Energy costs to birds from disturbance and displacement from habitat in project area from noise and activities first 2 weeks about the same as A; longer period of diminished disturbance and displacement during long-term production from additional directional drilling. Reduction of habitat quality by potential unauthorized off-highway vehicle use same as A; minimized by gates. Slightly higher potential for mortality from vehicle collisions due to longer road; minimized by controlling vehicle speed.	Without habitat improvement project, continued suppression of understory growth, limiting structural complexity and habitat diversity for birds. No other impacts.

Affected Component	**Alternative A**	**Alternative B** (compared to A)	**No Action Alternative** (compared to A)
Vegetation	Loss of vegetation on 8 acres of habitat; minimized by reclamation. Potential establishment of invasive vegetation; minimized by preventive measures and control. Cattle guards minimize degradation from stray cattle. Habitat improvement project enhances understory habitat.	Slightly more (0.58 ac) loss of vegetation; minimized by reclamation. Slightly more potential establishment of invasive vegetation; minimized by preventive measures and control. Cattle guards minimize degradation from stray cattle same as A. Habitat improvement project enhances understory habitat same as A.	Without habitat improvement project, continued suppression of understory growth. Without cattle guards, stray cattle may degrade habitat by preventing growth of native grasses, causing erosion, and promoting invasion of noxious weeds. No other impacts.
Cultural and Historical Resources	No impacts	No impacts	No impacts
Recreational Resources	Slight reduction of recreational opportunities by restricting recreation in vicinity of project site. Presence of vehicles and equipment reduces quality of recreational experience in vicinity of restricted area.	Recreational restrictions would be in place for longer period of time. Reduction in quality of recreational experience would occur over longer period of time.	No impacts

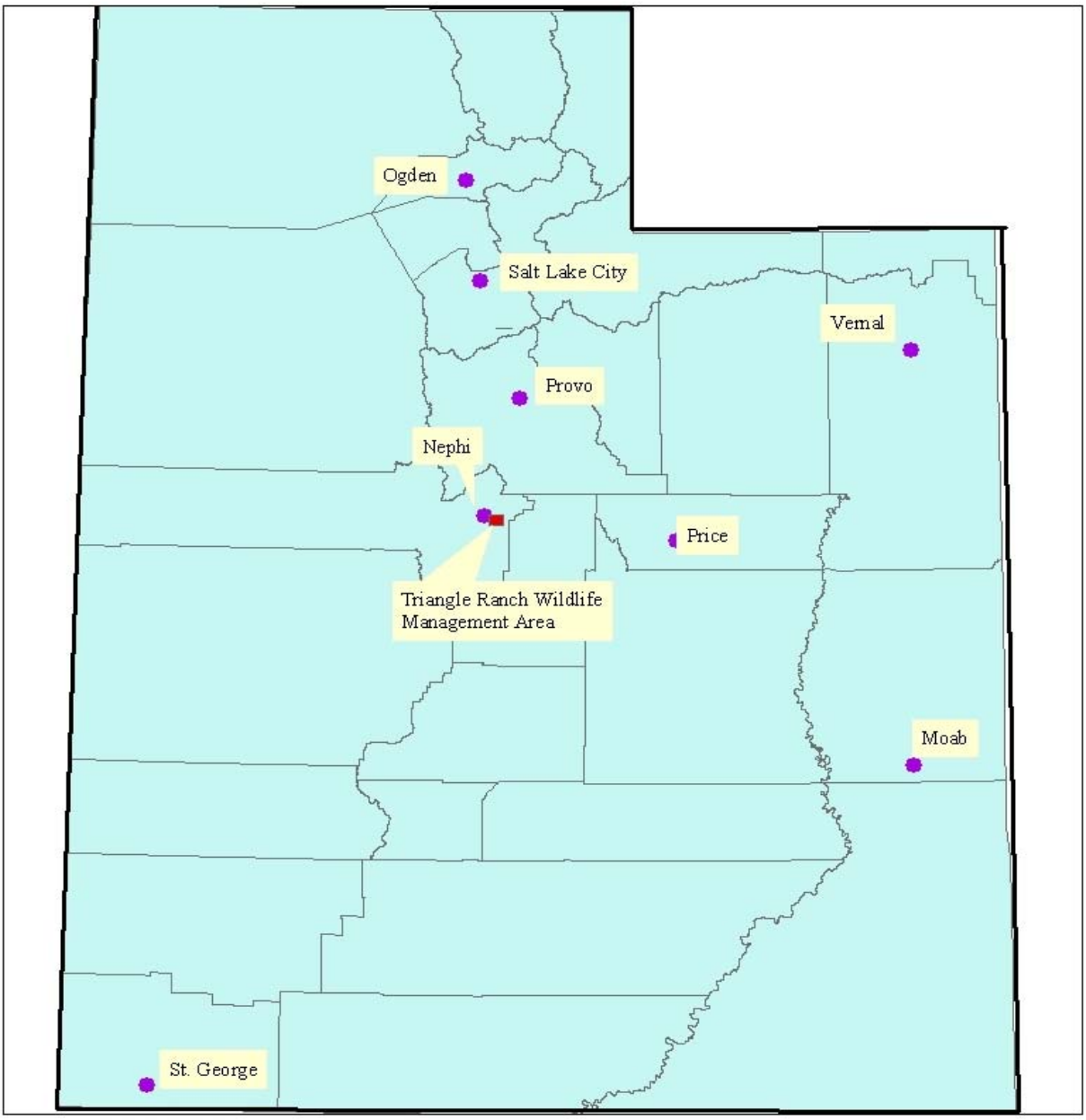

Figure 1. Location of Triangle Ranch Wildlife Management Area in Juab County, Utah

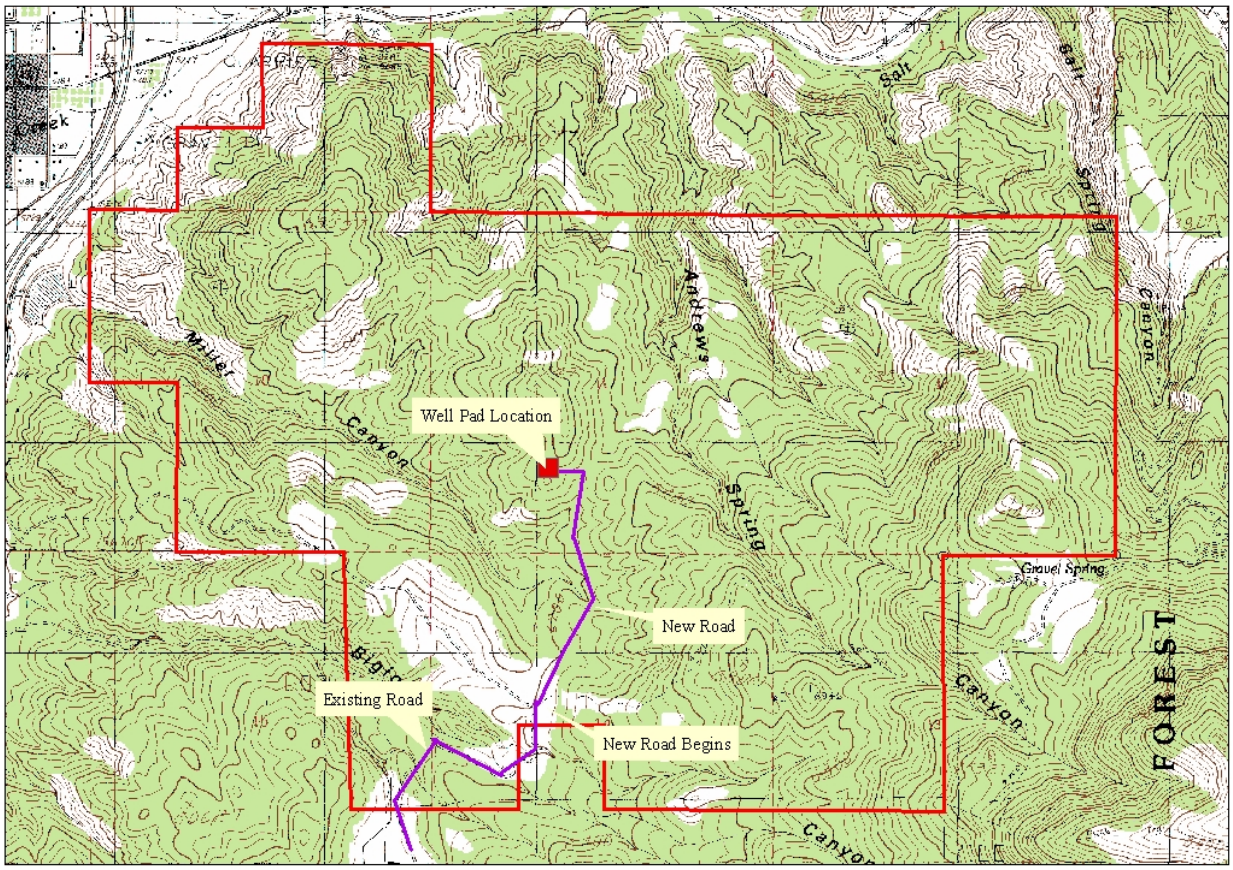

Figure 2. Alternative A (Preferred Alternative)

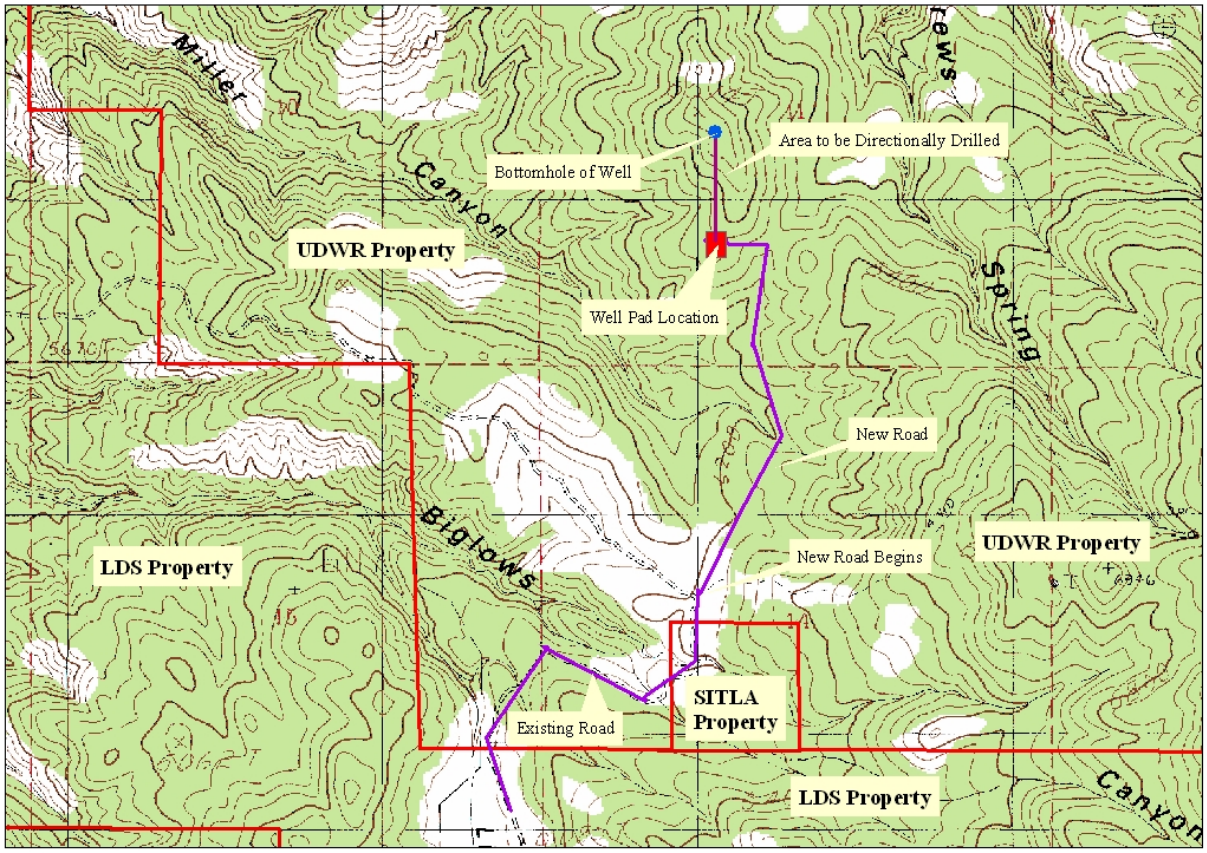

Figure 3. Alternative A and Land Ownership of Properties in the Project Area

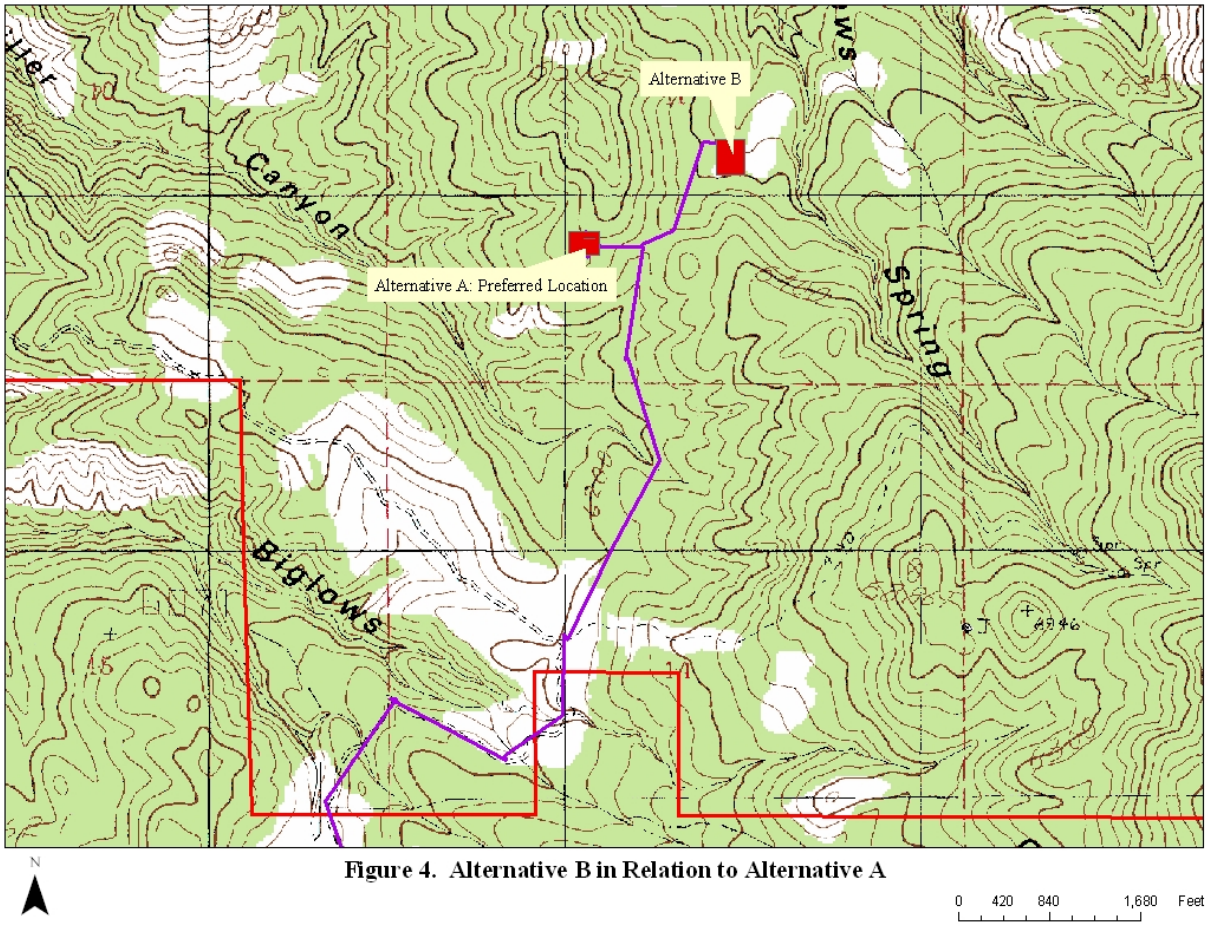

Figure 4. Alternative B in Relation to Alternative A

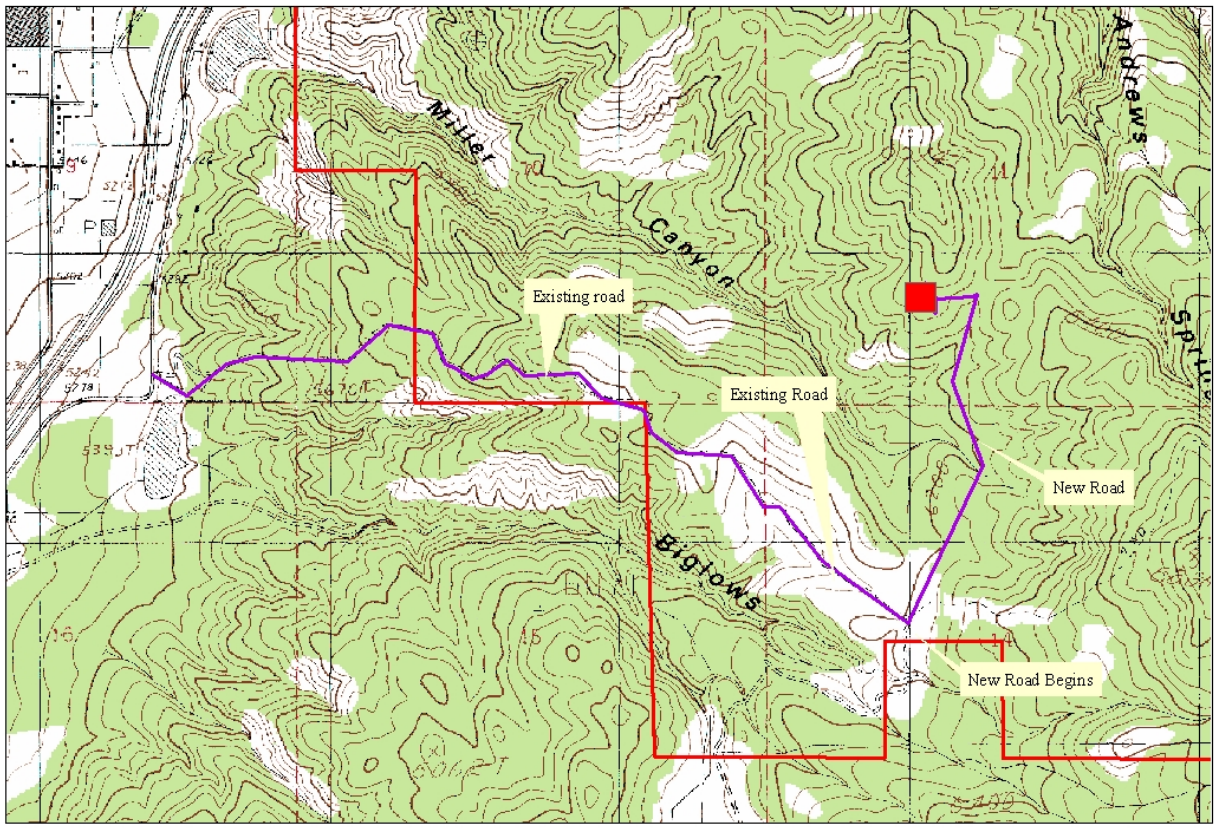

Figure 5. Dismissed Alternative from West

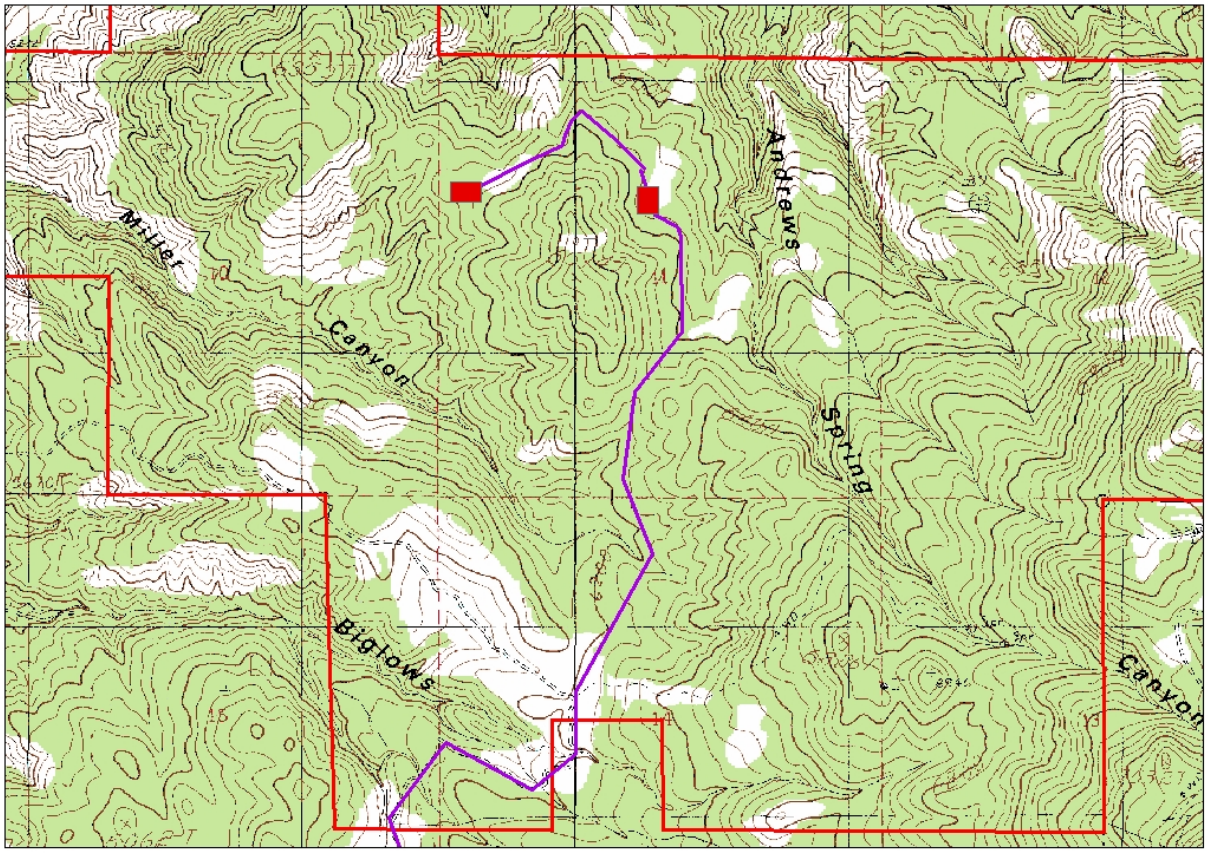

Figure 6. Dismissed Alternatives with Northern Well Pad Sites

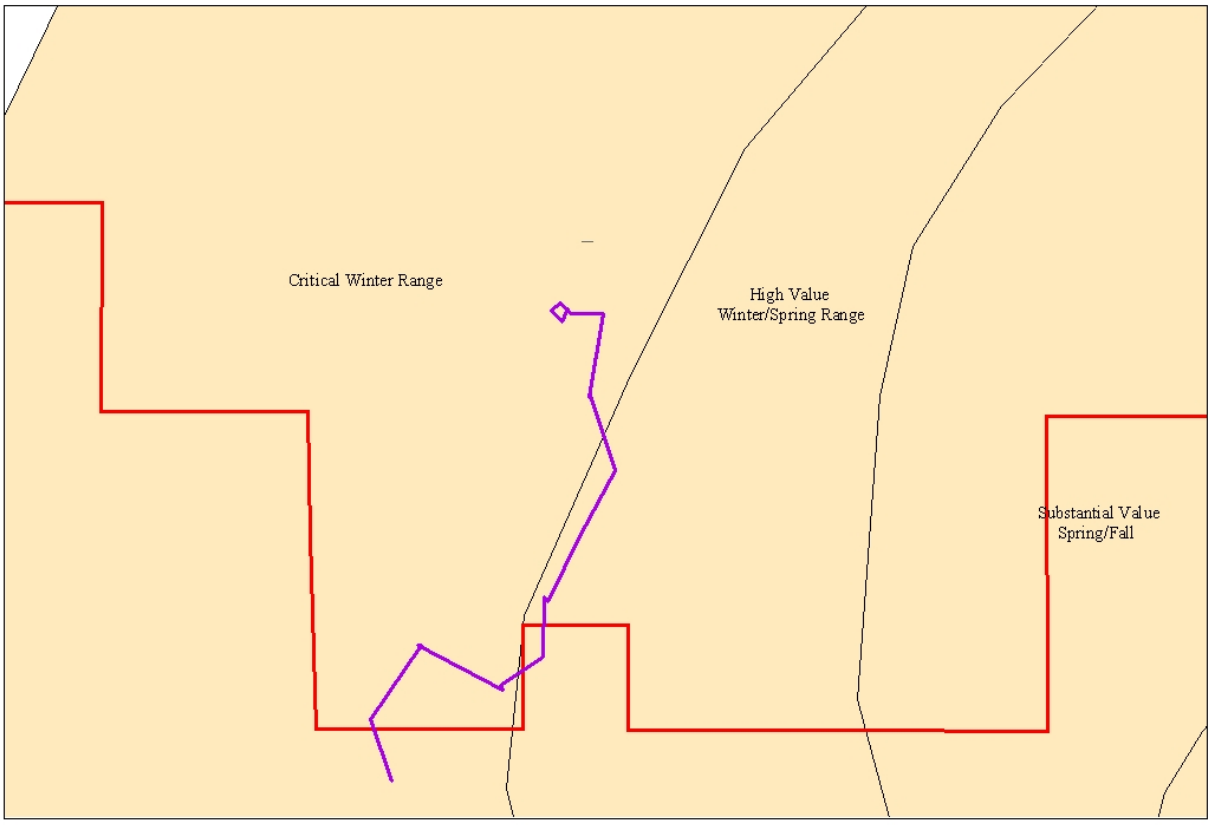

Figure 7. Elk Habitat Value on the Triangle Ranch Wildlife Management Area

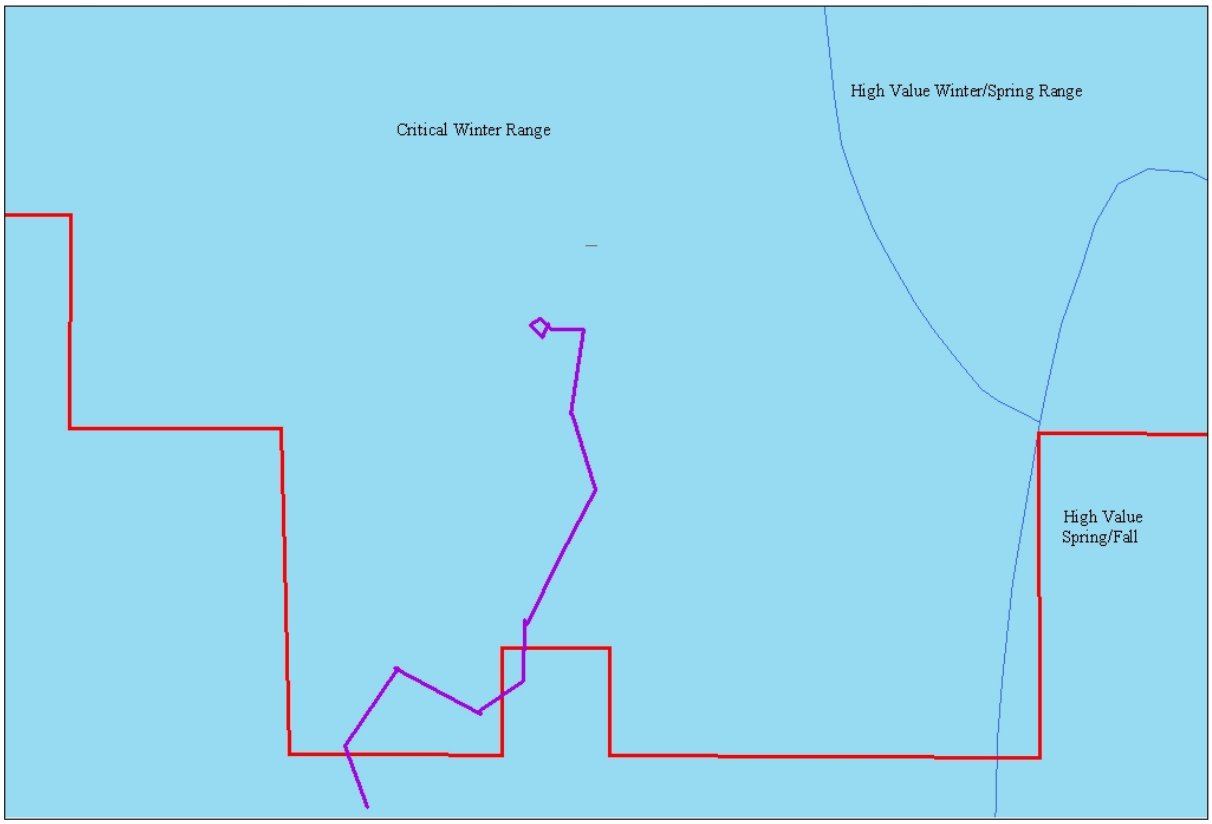

Figure 8. Mule Deer Habitat Value on the Triangle Ranch Wildlife Management Area

APPENDIX A

Federally Listed and Utah State Sensitive Species Found in Juab County, UT

Federally Listed Species:

Common Name	Scientific Name
Bald Eagle (Threatened)	*Haliaeetus leucocephalus*
Yellow-billed Cuckoo (Candidate)	*Coccyzus americanus*

Utah State Sensitive Species:

Common Name	Scientific Name
American White Pelican	*Pelecanus erythrorhynchos*
Bobolink	*Dolichonyx oryzivorus*
Burrowing Owl	*Athene cunicularia*
California Floater	*Anodonta californiensis*
Dark Kangaroo Mouse	*Microdipodops megacephalus*
Eureka Mountainsnail	*Oreohelix eurekensis*
Ferruginous Hawk	*Buteo regalis*
Fringed Myotis	*Myotis thysanodes*
Greater Sage-grouse	*Centrocercus urophasianus*
Kit Fox	*Vulpes macrotis*
Leatherside Chub	*Gila copei*
Lewis's Woodpecker	*Melanerpes lewis*
Long-billed curlew	*Numenius americanus*
Pygmy Rabbit	*Brachylagus idahoensis*
Short-eared Owl	*Asio flammeus*
Three-toed Woodpecker	*Picoides tridactylus*
Townsend's Big-eared Bat	*Corynorhinus townsendii*
Utah Physa	*Physella utahensis*
Western Toad	*Bufo boreas*

APPENDIX B

State of Utah

Department of Natural Resources

Division of Wildlife Resources

JON M. HUNTSMAN, JR.
Governor

GARY R. HERBERT
Lieutenant Governor

MICHAEL STYLER
Executive Director

MILES MORETTI
Acting Division Director

February 9, 2005

Michelle Herrell
Division of Wildlife Resources
Department of Natural Resources
1594 West North Temple
Salt Lake City, Utah 84114

Dear Ms. Herrell:

I am writing in response to your request dated February 1, 2005 for information regarding species of special concern proximal to Triangle Ranch Wildlife Management Area located in Juab County, Utah.

The Utah Division of Wildlife Resources (UDWR) does not have records of occurrence for any threatened, endangered, or sensitive species within the property boundaries or within a three-mile radius of the property.

The information provided in this letter is based on data existing in the Utah Division of Wildlife Resources' central database at the time of the request. It should not be regarded as a final statement on the occurrence of any species on or near the designated site, nor should it be considered a substitute for on-the-ground biological surveys. Moreover, because the Utah Division of Wildlife Resources' central database is continually updated, and because data requests are evaluated for the specific type of proposed action, any given response is only appropriate for its respective request.

In addition to the information you requested, other significant wildlife values might also be present on the designated site. Please contact UDWR's habitat manager for the central region, Ashley Green, at (801) 491-5678 if you have any questions.

Please contact our office at (801) 538-4759 if you require further assistance.

Sincerely,

Lenora B. Sullivan
Information Manager
Utah Natural Heritage Program

cc: Ashley Green, CRO